Are Comparisons Luxuries? Subjective Poverty and Positional Concerns in Indonesia

Jinan Zeidan

amse
aix marseille
school of economics

Working Papers / Documents de travail

Are Comparisons Luxuries? Subjective Poverty and Positional Concerns in Indonesia

Jinan Zeidan

WP 2015 - Nr 05

Are Comparisons Luxuries? Subjective Poverty and Positional Concerns in Indonesia.*

Jinan ZEIDAN

February 2015

Abstract

We explore (i) the usual determinants of happiness in Indonesia, with a special focus on the role of various measures of absolute income; (ii) the presence of relativistic concerns or positive external effects in shaping attitudes to subjective well-being; and (iii) whether this potential effect changes sign with income level. Additional evidence offered by our investigation relates to the effect of past income levels as well as to that of aspirations. In line with other literature from poor contexts, we find that the subjective well-being of Indonesians is positively affected by the comparison with the income of people around them. This positive influence is unambiguously more important for the poor than for the rich. This pattern is consistent through different measures of well-being and holds also when accounting for past income levels, and lagged income expectations.

Key Words : Indonesia, subjective well-being, external effects, positional concerns.

JEL Classification : O12, I30, I31

*__Acknowledgements__ : Jinan Zeidan is affiliated to Aix-Marseille University (Aix-Marseille School of Economics), CNRS & EHESS. I am grateful to Olivier Bargain, Claudia Senik and Alpaslan Akay for their precious comments. Usual disclaimers apply. Corresponding author: jinan.zeidan@univ-amu.fr

1 Introduction

There is a growing acceptance that individuals' welfare heavily depends on their relative position in society. Recent evidence from the happiness literature attests that the income of others affects an individual's own subjective well-being (see, e.g., Clark et al., 2008). Another strand of the literature points to the presence of relative concerns with respect to other domains in life such as children's education, family's housing and healthcare, vacations or even the value of a car (e.g., Alpizar et al., 2005; Guillen-Royo, 2011). While economic interest in positional concerns appears to be increasing, most of the available evidence has been for developed countries, where the income of a reference group negatively affects subjective well-being. This negative influence underlies the so-called relative deprivation and status effects, reflecting envy and jealousy. However, evidence regarding relative concerns in developing countries has been limited, and results offered are somewhat mitigated. While a number of studies are suggestive of negative comparison group effects (e.g., Carlsson et al., 2009; Fafchamps and Shilpi, 2009; Knight et al., 2012), other evidence points in a different direction, indicating a positive impact of income distribution on subjective well-being (e.g., Ravaillon and Lokshin, 2010; Kingdon and Knight, 2007).

The positive effect of reference group income might arise through various mechanisms. Firstly, according to the theory of anticipatory feelings, others' income serves as piece of information used to form expectations about one's own perspectives. In this sense, the presence of better-off individuals among the peers can be interpreted as a positive "signal" with respect to likely future income flows, and thus lead to greater satisfaction (Caplin and Leahy, 2001; Hirschman, 1973; Senik, 2004). Other theories indicate how poor individuals might share in economic gains to friends and neighbors. The uninsured risks facing poor people and the odds of falling into permanent penury lead to various arrangements for mutual support or risk-sharing.[1] Positive externalities may also be present for the poor living in relatively well-off areas since communities can be important institutions for providing employment opportunities and local-public goods (Mansouri and Rao, 2004; Jalan and Ravaillon, 2002). Positive external effects may occur dependently or independently of one's current income, this being for instance the result of better personal security in the presence of uninsured risks. Finally, positive relative concerns can be explained as the result of altruistic or humanitarian concern for other's well-being. This is especially true in rural and communal societies characterized by kinship relations and high intra-group solidarity (Akay et al., 2012).

[1] See, e.g, Ravaillon and Lokshin (2010), Ravallion and Dearden (1988), Murgai et al. (2002), Fafchamps and Lund (2003), etc.

Positive and negative relative concerns may coexist. Depending on the context, one may prevail over the other. There is a widely held belief that the positional concerns are more pronounced for the rich than for the poor. In this study, we aim to test the presence and the sign of relative income concerns in Indonesia where, despite the progress made in reducing poverty, many people remain poor and vulnerable. Out of a population of 234 million, more than 32 million Indonesians currently live below the poverty line and roughly half of all households remain clustered around the national poverty line set at the equivalent of $22 per month[2]. Income inequality is also an important issue in Indonesia with a Gini Index around 0.39, with it being greater in urban areas than in rural areas.[3]

The richness of our survey and the spacial coverage of the sample allows us to shed light on different aspects of the relationship between reference group income and subjective well-being. We primarly intented to explore (i) the usual determinants of happiness in Indonesia, with a special focus on the role of various measures of absolute income; (ii) the presence and the sign of relative income effect; and (iii) whether this potential effect changes sign with income level. Additional evidence offered by our investigation relates to the effect of past income levels as well as to that of aspirations which may influence the extent to which individuals are satisfied with their actual levels of income. We find that the subjective well-being of Indonesians is positively affected by the comparison with the income of people around them. This positive influence is unambiguously more important for the poor than for the rich. This pattern seems to be consistent through two different measures of well-being and holds also when accounting for past income levels or more complete geographic effects. Further, our results held when lagged income expectations are accounted for.

An important issue in our study regards the definition of the reference group. The reference group is often defined as the group of people that an individual compares him/herself with or whose standards he uses to evaluate himself.[4] Only a limited number of studies have access to the reference group as directly defined by respondents themselves.[5] Obviously, whenever it is not the case that information on individuals' reference groups has been collected in the data, the common practice implies that the researcher creates the reference group based on usual grouping of "similar" others. We follow this practice.

[2]World Bank, "Indonesia Overview" – website text, Available at:
http://www.worldbank.org/en/country/indonesia/overview

[3]The latest statistics point to a Gini Index that reaches 0.42 in Indonesian rural areas according to the World Bank PovcalNet. Source: http://iresearch.worldbank.org/PovcalNet/index.htm?3

[4]For discussion of the concepts of reference groups, see Sherif and Sherif (1969).

[5]Even when data for the reference group definition is collected, this may not be useful. The concept of reference group is dynamic and may vary with daily changing circumstances.

However, this suggests the presence of a potential bias arising from created reference group. Our results are robust to changing reference groups based on various groupings of both individual and geographical characteristics.

The paper develops as follows. We start by reviewing the literature on the role played by relative concerns on subjective well-being in developing countries in section 2. In Sections 3 and 4 respectively, we describe our data and empirical approach, while in Section 4 we present our findings. Section 5 proposes some additional checks. In the final section, we summarise and conclude.

2 Literature review: Income comparisons in developing countries

There is a growing literature questioning the presence of relative income concerns in developing countries. However, there is still paucity of panel data evidence or large samples. Most of the literature appeals to cross-country data, or small samples from rural areas. Results in the literature so far differ across countries and following the reference group chosen as well as the methodology used (Hypothetical preferences, direct income comparisons, or direct subjective comparisons of one income vis-à-vis neighbours, parents, etc.). Interestingly, relative concerns seem to have different relevance in developing and developed countries. Generally, studies regarding developed settings conclude to a negative impact of reference group income whereas those in less developed settings find it to be positive, or non significant.

The first evidence to find positive effect of reference group income on subjective well-being was Senik (2004) who test for social effects in self-reported happiness in Russia. The author regresses self-reported life staisfaction on one's own income and the mean income of the area of residence. In marked contrast to the developed-country litearture, she founds evidence of positive external effects of neighbors' income, rather than the negative effect predicted by relative concerns.

The dissimilarity between the two contexts is further established by Corazzini et al. (2012) who use hypothetical preferences to compare the degree of relative income concerns across four low-income countries (Bolivia, Brazil, Kenya and Laos) and four high-income countries (Italy, Sweden, Switzerland and the UK). They conclude to relative concerns in the perception of well-being, with the strength of relativism being higher for respondents in high-income countries.

Our literature review will be presented in the following three subsections to reflect results from three different continents: Latin-America, Africa, and Asia.

2.1 Evidence from Latin-America

In a continent-wide investigation, Graham and Felton (2006) found negative effect of regional income on individual well-being across 18 Latin American countries. Similarly, Rojas (2008) appeals to data from the 2007 Gallup survey in 19 Latin American countries. The author provides evidence that both ladder of worst to best possible life and satisfaction with standard of living rise with the log of own income but fall with the log of the average income in the reference group as definied by age, sex and country combinations. Moreover, in the case of satisfaction with standard of living, empirical results show equal and opposite coefficients of the two variables, indicating that an increase in everyone's income would leave no-one in Latin America better off.

Castilla (2012) considers Mexican data including subjective assessments of income adequacy and income satisfaction. Positional concerns are introduced by considering these two subjective welfare measures as a function of both the respondents' absolute level of income and either the income of a reference group, income aspirations by that stage of life, or the level of income the individual had three years earlier. Results indicate that the likelihood to be satisfied with one's income level increases with own expenditures, but falls with income rating relative to the three reference points[6]. Assessments of income adequacy yield to similar results, except for past levels of income, which do not significantly correlate with the degree to which people consider their current income adequate. Interestingly, these findings vary across different segments of the income distribution with subjective welfare of the poor being more influenced by the inability to reach income aspirations, whereas income comparisons relative to others is a more prominent concern among the non-poor respondents.

Guillen-Royo (2011) analyzes small sample data from seven communities in Peru, and shows that reference group consumption is negatively related to satisfaction with children's education, family's housing and clothes. This is consistent with relative income effects for these domains. However, this is not the case for family healthcare and food domains, for which neither family's own level of consumption nor the average level of consumption in the community significantly influenced the consumption adequacy assessment. Finally, using small sample data from Venezuela in 2005, Kuegler (2009) finds a higher life satisfaction of Venezualans who consider themselves as better off than their

[6] In the case of past income, results are only significant when the individual reports being worse off than three years ago, which is consistent with loss-aversion.

own siblings. At the same time, this relative wealth effect is stronger for respondents with above-median incomes and those who work in higher-rank professions.

2.2 Evidence from Africa

Akay et al. (2012a) use two survey experiments from Northern Ethiopia to test whether there are positional concerns among extremely poor people in the dimensions of income *per se* and income from an aid package. The authors consider hypothetical preferences where individuals selected from two villages to live in (or two aid packages to choose from) and where their own as well as others' income differed between the two scenarios. The low estimated marginal degree of positional concern (compared to what is found in the literature) suggests that the choices of most Ethiopian subsistence farmers are based on absolute income alone. In a previous work using the same data, Akay and Martinsson (2011) also find no significant effect of reference group income on life satisfaction.

Bookwalter and Dalenberg (2010) explore a large household survey from South Africa in early 1990s. The authors find no significant impact of cluster-level wealth for Whites, but a positive and significant effect of others' income for non-Whites. Different results, more consistent with income comparisons, are nevertheless obtained when other measures of relative accomplishments are analyzed. Notably, failing to be as wealthy as one's parents has a considerable negative impact on an individual's own assessment of well-being. Bookwalter and Dalenberg (2010) stress on the fact that the traditional emphasis on geographic, age, and/or educational peers may not provide the best reference group for comparisons.

Ravallion and Lokshin (2010) appeal to cross-sectional data from the 2004 Malawi Integrated Househlod Survey administrated under the Living Standards Measurement Study (LSMS) to test the presence of a relative deprivation issue in one of the world's poorest economies. Self-rated life satisfaction is firstly regressed on objective measures of economic welfare (meausred by own consumption expenditures by person), and an estimate of comparison-group income (given by the mean consumption in the area of residence excluding the respondent), as well as an interaction term between own consumption and that of the reference group. Their results do not suggest that comparisons are an important concern for the majority of the Malawians, and certainly not for the poor. Indeed, unlike evidence from developed countries, the study concludes to a positive external effect of comparison-group income on an individual's life satisfaction, although these influences are largely confined to rural areas. Secondly, the authors regress life satisfaction on a measure of self-assessed economic welfare derived from respondents' answers to the question: "*Imagine six steps, where on the bottom, the first step, stand the poorest people, and*

on the highest step, the sixth, stand the rich. On which step are you today?", as well as their assessment of the economic welfare of their neighbors and their friends. Results are similar to those obtained when modeling individual life satisfaction as a function of the objective measures of own and local neighbourhood consumption. Indeed, positive external effects remain for the rural and the poorest groups whereas subjective assessment of friends' economic welfare are negatively correlated to own self-assessed economic welfare amogst those relatively well-off and living in urban areas.

Kingdon and Knight (2007) analyze the role of relative income in South Africa and find evidence of negative relative income effects within race groups. However, similar to Senik (2004) and Ravaillon and Lokshin (2010), they conclude to positive relative income effects within neighborhoods.

Finally, Kenny (2005) uses data from a survey of 566 households in Tanzania, in which respondents report their actual income grouping as well as the amount of income that they see as necessary to be wealthy. The average income of the area appears to be one key determinant of what people define as whealthy income.

2.3 Results from Asia

A considerable amount of the literature in Asia has been dedicated to China where evidence is consistent with the presence of income comparisons in developing countries. Using data from 31 Chinese cities, Smyth and Qian (2008) found that an individual's happiness is negatively related to monthly income in the city where he/she lives, accounting for own income. Akay et al. (2012b) examine the relative concerns of rural-to-urban migrants in China and find that results depend on the reference group chosen. Indeed, the subjective well-being of this group is negatively influenced by the income of other migrants and workers of home regions while a positive, "signal", effect emerges vis-à-vis urban workers. In addition, Gao and Smyth (2010) show that job satisfaction is negatively correlated with reference group income defined as either the predicted income of people an individual defines as similar, or average income in the firm in which he/she works. Knight et al. (2012) appeal to Chinese data from the 2002 CHIP national household survey where, besides direct questions on subjective wellbeing, people were asked who individuals considered as their reference group. The responses to this later question show that comparisons in China are local inasmuch as 70% of respondents consider their village as their reference group. The main conclusion of the paper is however that, controlling for both own and village income levels, those who declare that their own income was much above the village were significantly happier. Using the same dataset, Knight and Gunatilaka (2010a and 2010b) highlight the relevance of relative income rather than

absolute income as well as the importance of varying reference groups. However, Knight et al. (2009) find, for relatively poor rural Chinese households, that their happiness is positively correlated with the income of other rural households.

Asadullah and Chaudhury (2012) use data from rural Bnagladesh to test whether relative income position matters for individual well-being, and whether its effect dominantes that of absolute income. Their results show that conditional on own household income, individuals who report their wealth to be lower than their neighbours in the village also report lower satisfaction with life. The strength of this relative effect depends on the individual's own characteristics and wealth, being stronger for rich respondents. Likewise, those living in villages with higher inequality are likely to be worse off. However, when compared to the effect of absolute income, these effects remain modest.

Fafchamps and Shilpi (2009) find that consumption adequacy in Nepal rises with own wealth and falls with reference group consumption, defined as the mean or median consumption of other households living in the same ward as the respondent. Relative income is thus an important predictor of subjective welfare even in mountainous villages of Nepal where households are still isolated from modernity and other urban influences.

Carlsson et al. (2009) look at hypothetical preferences over different absolute and relative income situations in India. People are asked to choose between two hypothetical income outcomes where one choice has greater absolute return while the other is more propitious in relative terms. The authors attribute around half of the effect of income on well-being to some kind of status or relative income concerns, and highlight the resemblance between this figure and that established in rich countries. They also note that respondents from low social status seem to be more sensitive to relative income.

Cojocaru (2010) appeals to cross-sectional data from the 2007 LSMS in Tajikstan and finds that individual's well-being is strongly and negatively influenced by their self-positionning in terms of household welfare vis-à-vis neighbours, conditional on the household's own consumption expenditures. However, regional income seems to have no significant effect on one's own life satisfaction and the author suggests this result may be a consequence of choosing an inaccurate reference group.

3 Data

We use the 2007 round of the Indonesian Family and Life Survey (IFLS). This is a comprehensive, nationally representative survey of households that was administered by the RAND corporation in collaboration with the University of Indonesia. The survey was first fielded in 1993 (IFLS1) and later waves were conducted in 1997, 2000 and late 2007. The

last wave (2007/2008) is the only wave that provides individual data on the perception of happiness and will therefore be used in a cross-section study.

A section of the adult questionnaire asks respondents about their self-evaluations of their own standard of living and their happiness, which are used for the purpose of this study. Our measure of overall well-being is provided by answers to the happiness question contained in the adult questionnaire. This question is: "*Taken all things together how would you say things are these days - would you say you were (1) very happy; (2) happy; (3) unhappy; (4) very unhappy?*". Our sample consists of 24,154 observations, with the majority of the sample being happy (85% gave (2)). Slightly less than 7% were very happy; 8.43% gave (3) as their answer and only 0.32 % gave (4). We interpret this ordinal, discrete variable as a proxy for the flow of utility derived by individuals, assuming a latent continuous utility function. Due to the smallish proportion of people choosing the very unhappy answer, we aggregate the very and unhappy categories. We then reversed the scale to obtain an ascending rating of happiness of one to three, where three being the very happy assessment.

We check our results when using alternative measure of subjective well-being as derived from the question: *"Concerning your current standard of living, which of the following is true? It is less than adequate for my needs(1); It is just adequate for my needs (2); It is more than adequate for my needs (3)*". The resulting variable is called "living-standard adequacy". This variable, along with "consumption adequacy" measurements, are called subjective measures of poverty, and have recently been introduced in some analysis of relative concerns.[7]

The initial sample size consists of 41, 420 adults aged 15 years and above. In the analysis, we take out observations with missing dependent or independent variables (41%) which gives an baseline working sample of 24, 154 observations.

4 Methodology

Our first test entails checking that the data generate the usual pattern of socioeconomic correlates of happiness established in the literature. Therefore, our basic method is to estimate happiness equation of the form:

$$H_i^* = \alpha + \beta \ln Y_i + \gamma X_i + \epsilon_i \tag{1}$$

[7]For further information on the subjective measures of poverty, see Pradhan and Ravallion (2000), Ravallion and Lokshin (2001), Ravallion and Lokshin (2002).

where H_i^* is a latent variable of the happiness, $\ln Y_i$ is the logarithm of level of consumption (income) of the respondent's household and X_i a vector of variables that allow to control for observable heterogeneity in household and geographic attributes. X_i thus contains variables such as age, age-squared, gender, marital and health status, educational attainment, employment as well as ethnicity and province dummies. A detailed description of the variables and descriptive statistics are provided in Table A.1.

Assuming that the error term ϵ_i is normally distributed with unit variance, and taking account of the inherent ordering in the variable H_i , Eq.(1) is estimated using an ordered probit model.

We will use alternative measures of economic welfare as one argument of utility. The IFLS collects data on household consumptions of a wide range of food and non-food items, and detailed information on various sources of income including income in-kind, and individual wages.

The most widely used objective measure of economic welfare in developing countries is consumption expenditure per person (C) given by total household expenditure, including spending on food (purchased and home-produced and food received as gifts), non-food items, estimated flow of services from consumer durables and the actual or self-estimated rental cost of housing.[8] In a first specification, we thus include the logarithm of household annual household expenditure. The household expenses were deflated by the number of adult equivalents in order to capture differences by age and economies of scale in consumption. The adopted approach and formula to define the number of adult equivalents are detailed in National Research Council (1995). This is one of the most commonly used equivalence scales as parameters can be set at sensible values following the wealth and development level of each country. We then check, in a second and a third specifications respectively, the economic welfare impact when deflating by household size to obtain a per capita consumption measure or when accounting for household income[9] rather than household consumption expenditures.

The estimate of β obtained from Eq.(1) reflects to what extent does absolute income matter for happiness. Additional gains in income are generally expected to rise happiness but only until basic needs are fulfilled. Once basic necessities (such as securing the food supply, shelter, health, and clothing) are taken care of, happiness does not increase with income. It is therefore conceivable that, over the long run, raises in wealth will generate no increase in happiness. This is in line with micro-level evidence from the GSOEP provided by Di Tella, Haisken-De New, and MacCulloch (2010) who find that

[8] For details on how the consumption aggregate was formed, see Deaton and Zaidi (1998)

[9] Household income includes all possible kinds of income, comprising work payment, state and private transfers as well as the value of the home production of food items.

income growth provides only a temporary boost to life satisfaction.[10] This statement needs however to be nuanced as highlighted by recent work of Stevenson and Wolfers (2008) who have re-assessed the Easterlin Paradox using international and country-level rich datasets, and have concluded to a clear role for absolute income in determining subjective well-being. The authors showed indeed that there is no evidence of a satiation point beyond which wealthier countries have no further increases in happiness levels, and that economic growth is associated with rising happiness when examining the association between changes in subjective well-being and income over time within countries.
Still, the estimate of β may be the outcome of a "focusing illusion". In other words, it can proxy for factors such as comparisons of individual's own actual income and their past levels of income or the incomes of those around them (Deaton, 2008). Hence, we also need to include measures of the economic welfare of relevant groups for social comparison or as generators of external effects. We thus estimate the following equation:

$$H_i^* = \alpha + \beta \ln C_i + \gamma \ln C_i^n + \mu X_i + \epsilon_i \tag{2}$$

where C_i is a measure of adult-equivalent per capita annual expenditure, $\ln C_i^n$ the logarithm of the leave-out mean consumption for the reference group[11] and X_i the same vector of controls as in Eq. (1).

The reference group is defined as the group of people to whom one compares oneself. The empirical literature have defined different reference groups based on characteristics such as age (McBride, 2001), or geographical area (Blanchflower and Oswald, 2004; Luttmer, 2005). Alternatively, some authors consider reference group as a combination of individual and geographic attributes. For instance, Akay and Marstinson (2011) define the reference group as related to age, geographic area, and the size of land holdings. Following past practice in the literature, we use personal attributes along with geographic structure of the sample design to estimate the mean consumption of "similar" people, that is, age-peers of the same gender, ethinicty, having accomplished the same educational attainment and living in geographic proximity. Age of the individuals was classified into five groups, and geographic area was defined as the sub-district.

The use of household consumption, rather than household or individual income, as a proxy for wealth is motivated by the better consumption data in household surveys in

[10] The authors regress life satisfaction on income and on several lags of income and conclude that life satisfaction adapts completely to income within a four-years time interval.

[11] i.e. the mean consumption of all sampled households in the respondent's reference group, excluding the respondent.

developing countries [12] (Deaton, 2004) as well as the common view of welfare in the Indonesian society that is far from being individualistic. We will therefore use the per adult equivalent consumption expenditure variable as a proxy for wealth while introducing household income as well as the total value of assets[13] in additional specifications as a robustness checks.

Finally, we also test an extended version of Eq. (2) where, similar to Ravaillon and Lokshin (2010), we allow for an interaction effect between own consumption and the mean for the reference group as follows :

$$H_i^* = \alpha + \beta \ln C_i + \gamma \ln C_i^n + \delta \ln C_i . \ln C_i^n + \mu X_i + \epsilon_i \tag{3}$$

If the external effect changes sign at high levels of income, then not considering this interaction term could lead to little or no relationship, through averaging across the positive and negative effects. Such interaction effects may arise from theoretical models of risk-sharing or in the wake of urbanization in developing countries (Ravaillon, 2008; Ravaillon and Lokshin, 2010). It can be presumed that informal risk sharing arrangements and collective action are more common in rural and village-based societies, and tend to corrode with urbanisation. Neighbourliness and reciprocity are indeed widely thought to be more prevalent in villages, whereas institutionalized social security systems are likely to be more developed and consequently, take over in big cities.[14]

5 Results

5.1 The usual correlates of happiness

Estimates of Eq. (1) are reported in Table 1. In line with the international literature[15], happiness is U shaped in age and increases with subjective health and educational level. Religious Indonesians enjoy higher well-being. This could be owing to the fact that religious people are more likely to adopt healthy lifestyles, and to derive well-being from religious service attendance and meditative states. Religion also provides mechanisms for

[12] Expenditures tend to be less understated than income in less developed countries and most households engage in some consumption smoothing.

[13] These include housing, car, land properties, etc.

[14] For instance, Ravaillon and Dearden (1988) provide supportative evidence of how a moral economy (i.e. based on voluntary interpersonal transfers of money and goods) can perform the role of a social security system. Considering data from rural Java in Indonesia, the authors show indeed that transfers are taregted towards otherwise disadvatanged groups and donors hold a preference for less inequality.

[15] e.g. see Helliwell (2006) and Blanchflower (2008)

coping with life's hindrances, which in turn may reduce worries (e.g., Clark and Lelkes, 2005; Lim and Putnam, 2010). Also consistent with other developing country studies is the result that happiness is positively correlated with being married rather than divorced or widowed. Further, we find that happiness is lower for males, those living in West Java and whose ethinicty is Batak or Minang. Unsurprisingly, satisfaction is higher in employed individuals as opposed to those unemployed, and rises with various measures of household income.

Table 1: Basic regressions of happiness (ordered probit estimates)

Dependent variable = Happiness	(1) Coeff.	S.E	(2) Coeff.	S.E	(3) Coeff.	S.E
Demographic categories						
Female	0.0830***	(0.0209)	0.0825***	(0.0209)	0.0754***	(0.0211)
Age/10	-0.446***	(0.0448)	-0.440***	(0.0448)	-0.427***	(0.0450)
Age square/100	0.0415***	(0.00527)	0.0408***	(0.00526)	0.0390***	(0.00529)
Urban	0.0404*	(0.0209)	0.0407*	(0.0209)	0.0678***	(0.0206)
Religiousness						
Religious	-0.326***	(0.0377)	-0.327***	(0.0377)	-0.331***	(0.0379)
Somewhat religious	-0.470***	(0.0429)	-0.470***	(0.0429)	-0.479***	(0.0431)
Not religious	-0.598***	(0.0664)	-0.598***	(0.0664)	-0.604***	(0.0666)
Muslim	0.0826*	(0.0442)	0.0836*	(0.0442)	0.0656	(0.0445)
Financial categories						
Per adult equivalent household expenditures (log)	0.146***	(0.0128)				
Per Capita household expenditures (log)			0.142***	(0.0125)		
Per adult equivalent household income (log)					0.118***	(0.00936)
Employment						
Out of labour	-0.0141	(0.0222)	-0.0121	(0.0222)	0.0244	(0.0225)
Unemployed	-0.216***	(0.0684)	-0.214***	(0.0684)	-0.195***	(0.0687)
Self-assessed health						
Somewhat unhealthy	0.458***	(0.155)	0.457***	(0.155)	0.447***	(0.155)
Somewhat healthy	0.752***	(0.153)	0.752***	(0.153)	0.745***	(0.153)
Very healthy	0.974***	(0.156)	0.974***	(0.156)	0.972***	(0.156)
Education						
Higher secondary	0.184***	(0.0235)	0.186***	(0.0235)	0.193***	(0.0234)
Post secondary	0.420***	(0.0354)	0.421***	(0.0354)	0.454***	(0.0346)
Marital status						
Single	-0.390***	(0.0307)	-0.394***	(0.0307)	-0.384***	(0.0310)
Seperated	-0.746***	(0.112)	-0.749***	(0.112)	-0.747***	(0.112)
Divorced	-0.651***	(0.0616)	-0.656***	(0.0616)	-0.627***	(0.0623)
Widowed	-0.251***	(0.0456)	-0.252***	(0.0456)	-0.233***	(0.0461)
Ethnicity						
Sundanese	0.0488	(0.0388)	0.0513	(0.0388)	0.0597	(0.0390)
Bali	0.000960	(0.111)	0.00404	(0.111)	-0.00225	(0.112)
Batak	-0.311***	(0.0698)	-0.311***	(0.0697)	-0.320***	(0.0707)
Bugis	0.158**	(0.0727)	0.159**	(0.0727)	0.176**	(0.0730)
Sasak	-0.0320	(0.0791)	-0.0302	(0.0791)	-0.0274	(0.0794)
Minang	-0.158**	(0.0794)	-0.156**	(0.0794)	-0.163**	(0.0798)
Banjar	-0.0110	(0.0924)	-0.0112	(0.0924)	-0.0137	(0.0930)
Betawi	0.0460	(0.0559)	0.0483	(0.0559)	0.0599	(0.0564)
Southern Sumatrans	-0.149**	(0.0643)	-0.148**	(0.0643)	-0.141**	(0.0647)
Others	0.0792**	(0.0349)	0.0810**	(0.0349)	0.0853**	(0.0351)
Province						
North Sumatra	0.185***	(0.0583)	0.191***	(0.0583)	0.210***	(0.0589)
West Sumatra	0.0102	(0.0745)	0.0128	(0.0745)	0.0248	(0.0750)
South Sumatra	0.247***	(0.0606)	0.251***	(0.0606)	0.238***	(0.0609)
Lampung	0.281***	(0.0530)	0.284***	(0.0530)	0.308***	(0.0532)
DKI Jakarta	0.0952**	(0.0440)	0.0976**	(0.0440)	0.123***	(0.0442)
Central Java	0.0588	(0.0425)	0.0618	(0.0425)	0.0733*	(0.0427)
DI Yogyakarta	-0.0330	(0.0515)	-0.0320	(0.0515)	-0.00514	(0.0521)
East Java	0.134***	(0.0393)	0.135***	(0.0393)	0.164***	(0.0397)
Bali	-0.129	(0.104)	-0.129	(0.104)	-0.127	(0.104)
West Nusa Tenggara	0.223***	(0.0670)	0.224***	(0.0670)	0.240***	(0.0674)
South Kalimantan	0.347***	(0.0841)	0.349***	(0.0841)	0.311***	(0.0844)
South Sulawesi	0.242***	(0.0652)	0.246***	(0.0652)	0.265***	(0.0655)
Pseudo R2	0,0677		0.0677		0,0696	
Observations	24,154		24,154		23,960	

*Notes. The reference categories are: "very religious" for religiousness, "employed" for employment, "unhealthy" for self-assessment of health, "lower" for education, "married" for marital status, "Javanese" for ethnicity and "West Java" for province. *, **, *** : significant respectively at 10, 5 and 1 percent levels.*

5.2 Positive or Negative Relative Income Concerns?

Our estimates of Eq. (1) are presented in the first two columns of Table 2, using household consumption expenditures and income respectively. Results from Eq. (2) are in the next two columns. We provide two sets of results depending on how we consider geographic effects. Column (3) uses province and urban-rural dummy variables, whereas column (4) allows for a more complete accounting of the geographic effects, using a set of dummy variables for each district.

Table 2: The Impact of Reference income on Happiness (ordered probit estimates)

Dependent variable = Happiness	(1)	(2)	(3)	(4)	(5)
Log per adult equivalent household expenditures (log *C*)	0.150***		0.797***	1.032***	0.693**
	(0.0146)		(0.297)	(0.316)	(0.301)
Log leave-out mean per adult equivalent household expenditures in the locality	0.0360*		0.683**	0.915***	0.582*
	(0.0203)		(0.297)	(0.316)	(0.300)
Log per adult equivalent household income		0.124***			
		(0.0105)			
Log leave-out mean per adult equivalent household income in the locality		0.0236			
		(0.0159)			
Interaction of log *C* with log leave-out mean *C*			-0.0405**	-0.0557***	-0.0345*
			(0.0186)	(0.0197)	(0.0188)
Log lagged per adult equivalent household expenditures (log C(t-1))					0.0389**
					(0.0156)
Urban	Yes	Yes	Yes	No	Yes
Province dummies	Yes	Yes	Yes	No	Yes
District dummies	No	No	No	Yes	No
Pseudo R2	0.069	0.071	0.069	0.084	0.070
Observations	19,888	19,719	19,888	19,888	19,723

*Notes: All controls from table 1 are included. Figures in brackets are standard erros. *, **, *** : significant respectively at 10, 5 and 1 percent levels.*

Results show that subjective well-being increases with own consumption (income) and with reference group consumption (income)[16]. Moreover, our results are robust to changing the subjective well-being variable. Indeed, similar results are obtained for the regressions of more cognitive and income-related subjective variables such as the standard living adequacy, as shown in Table 3.

The negative sign of the interaction effect obtained in column (3) indicates that the external effect decreases as own-consumption rises. In other words, the richer an individual is, the lower this positive effect will be. This is consistent with Ravaillon and Lokshin's (2010) findings for Malawi pointing to negative interaction effects between absolute and relative income. However, this interpretation may not be convincing. Actually, there can be various issues as the income within a society rises. The reference group definition may

[16]Results also hold when using the assets as a proxy for wealth as shown in Table A.2 .

change and the income inequality may also be different[17]. In order to further check for the validity of this statement, we apply an alternative method of splitting the sample into two income groups, based on median household consumption expenditures level. Our hypothesis is therefore that the reference group income has different effects in the two sub-samples. Columns (1) and (2) of Table 4 show that the log of household expenditures is significantly positive for both groups but, whereas the coefficient on reference group expenditures is significant and positive for individuals below median income, it loses its statistical significance for the group above median income. In column (3), we focus on the rich people as defined by the top income quartile, where results point towards a negative, though insignificant, effect of reference group income. Overall, we conclude that absolute income matters for all groups, whereas relative income positively affects the poor but not the higher income groups. Again, this is consistent with results from other studies using the same methodology of splitting the sample in different income groups and concluding to different influence of relative income among the poor and the better-off households.[18]

Table 3: The Impact of Reference Income on Living Standard Adequacy (ordered probit estimates)

Dependent variable = Adequacy of living standard	(1)	(2)	(3)	(4)	(5)
Log per adult equivalent household expenditures (log *C*)	0.292***		1.060***	1.006***	0.760***
	(0.0127)		(0.256)	(0.271)	(0.258)
Log leave-out mean per adult equivalent household expenditures in the locality	0.0378**		0.805***	0.742***	0.549**
	(0.0173)		(0.255)	(0.271)	(0.258)
Log per adult equivalent household income		0.240***			
		(0.00911)			
Log leave-out mean per adult equivalent household income in the locality		0.0288**			
		(0.0136)			
Interaction of log *C* with log leave-out mean *C*			-0.0480***	-0.0447***	-0.0322**
			(0.0160)	(0.0169)	(0.0161)
Log lagged per adult equivalent household expenditures (log C(t-1))					0.166***
					(0.0134)
Urban	Yes	Yes	Yes	No	Yes
Province dummies	Yes	Yes	Yes	No	Yes
District dummies	No	No	No	Yes	No
Pseudo R2	0.078	0.084	0.079	0.100	0.085
Observations	19,888	19,719	19,888	19,888	19,723

*Notes: All controls from table 1 are included. Figures in brackets are standard erros. *, **, *** : significant respectively at 10, 5 and 1 percent levels.*

Columns (5) of Tables 2 and 3. report estimates when we additionally control for lagged income, that can influence the extent to which people are satisfied with their

[17] I thank Alpaslan Akay for this remark.

[18] See, e.g., Asadullah and Chaudhury (2012) for Bangladesh and Kingdon and Knight (2007) for South Africa.

actual absolute level of income. Depsite a fall in the coefficients of household income, the coefficient on current income is still positive and significant. We also still have the positive effect of the reference group income along with the negative sign on the coefficient of the interaction term. The coefficient on the lagged income is positive and significant, which suggests that the initial impact of getting more income appears to grow over time (by 4% = 0.03/0.693 in Table 2). Even though this coefficient is small in magnitude, we cannot reject the hypothesis of no complete adaptation to income during the period seperating the two waves. This result is in line with results on adaptation to status changes provided by Di Tella et al. (2010).

Table 4: The Impact of Reference Income on Subjective Well-Being, by Poverty Status

	(1)	(2)	(3)
	Below median income	Above median income	Rich (top quartile)
	Dependent variable = Happiness		
Log per adult equivalent household expenditures (log C)	0.105***	0.107***	0.00993
	(0.0333)	(0.0283)	(0.0430)
Log leave-out mean hhld expenditures	0.0623**	0.0113	-0.0416
	(0.0307)	(0.0276)	(0.0366)
	Dependent variable = Living standard adequacy		
Log per adult equivalent household expenditures (log C)	0.239***	0.270***	0.231***
	(0.0289)	(0.0242)	(0.0370)
Log leave-out mean hhld expenditures	0.0878***	-0.00144	-0.0139
	(0.0263)	(0.0233)	(0.0313)
Observations	9,852	10,036	4,976

*Notes: All controls from table 1 are included. Figures in brackets are standard erros. *, **, *** : significant respectively at 10, 5 and 1 percent levels.*

6 Additional checks

6.1 Adding lagged income expectations

The role of information and expectations seems to be of particular importance to our study since expectations may affect happiness by raising the aspiration level. We thus construct a variable reflecting what we see as lagged income expectations, and control for it in some specifications. In the previous wave of the survey, people were asked about their self-ranking on a six-rung income ladder, 1 represent the poorest group and 6 the richest. Individuals were also asked where they expect themselves to be in terms of ranking in the future. We take the difference between future and present self-ranking to create a

categorical variable that takes the value of 0 if people expect themselves to go down the ladder, 1 if they expect to keep the same level of income, and 2 if they expect to go up the ladder. The inclusion of this variable however considerably reduces the sample size. We thus reproduce our basic specifications based on a constant sample size along with the inclusion of the expectations variable. Table 5 clearly shows that the positive effect of reference group income is unchanged after the inclusion of controls for lagged income expectations, both for happiness and subjective measures of poverty.

Table 5: The Unchanged Effect of Reference Income on Subjective Well-Being after Controlling for Aspirations

Dependent variable	Happiness			Living standard		
	(1)	(2)	(3)	(4)	(5)	(6)
Log per adult equivalent household expenditures (log *C*)	0.542	0.538	0.160***	0.907***	0.908***	0.303***
	(0.365)	(0.365)	(0.0181)	(0.314)	(0.314)	(0.0157)
Log leave-out mean hhld expenditures	0.432	0.427	0.0513**	0.633**	0.634**	0.0308
	(0.364)	(0.364)	(0.0247)	(0.313)	(0.313)	(0.0210)
Interaction of log *C* with log leave-out mean *C*	-0.0239	-0.0236		-0.0378*	-0.0379*	
	(0.0228)	(0.0228)		(0.0196)	(0.0196)	
Lagged income expecattions						
Expect to keep the same level of economic rank (a)	0.109		0.108	-0.0652		-0.0669
	(0.0886)		(0.0886)	(0.0785)		(0.0785)
Expect rise in economic rank (b)	0.113		0.112	-0.0423		-0.0442
	(0.0899)		(0.0899)	(0.0795)		(0.0795)
Observations	13,312	13,312	13,312	13,312	13,312	13,312

*Notes: All controls from table 1 are included. (a) Reference category for expectations is "expect a fall in economic rank". Figures in brackets are standard erros. *, **, *** : significant respectively at 10, 5 and 1 percent levels.*

6.2 Changing Reference Groups

As we hinted at above, another important issue when analyzing positional concerns is to check for a potential bias arising from created reference groups when no information on individuals' reference groups has been collected in the data. To this end, the researcher should test the robustness of the findings by defining different reference groups (Akay et al., 2012a ; Kingdon et al., 2009 ; Clark and Senik, 2010 ; Senik, 2009). We therefore test how absolute and relative income influence subjective well-being in two other cases based on different groupings of individual and geographical characteristics. We used two different geographical areas as reference groups: (1) sub-district and (2) district. Results for happiness and living standard regressions are all reported in Table 6.

Columns (1) and (3) report the results when individuals are assumed to compare themselves to their age-peers in the same occupation at the sub-district level. This leads to a mean of approximately 5 households in the reference group. Columns (2) and (4) use

the same combination at the district level (rising the size of the reference group to 9 families). As previously, the respondent is taken out of the construction of the reference group income in both cases. Both specifications show a positive and significant effect of relative income on subjective well-being assessments. The unanimous conclusion is that relative income is a source of positive external effect in Indonesia, rather than exerting a negative influence on individuals' well-being.

Table 6: Estimation Results from Different Reference Groups

Dependent variable	Happiness		Living standard	
	(1)	(2)	(3)	(4)
Log per adult equivalent household expenditures (log *C*)	0.649**	0.604**	0.870***	1.103***
	(0.269)	(0.293)	(0.232)	(0.251)
Log leave-out mean hhld expenditures at subdistrict level	0.573**		0.656***	
	(0.269)		(0.231)	
Log leave-out mean hhld expenditures at district level		0.520*		0.885***
		(0.289)		(0.248)
Interaction of log *C* with log leave-out mean *C*	-0.0320*	-0.0288	-0.0369**	-0.0511***
	(0.0167)	(0.0181)	(0.0144)	(0.0156)
Mean size of reference group	5.19	9.14	5.19	9.14
Observations	22,322	23,444	22,322	23,444

*Notes: All controls from table 1 are included. Figures in brackets are standard erros. *, **, *** : significant respectively at 10, 5 and 1 percent levels.*

7 Conclusion

This paper has investigated whether relative deprivation matters for people in developing countries, using data from Indonesia. Ours is the first estimate of subjective well-being function for this country. The estimates of the micro-determinants of subjective well-being show that relative income positively affects individual well-being. Individuals who report their wealth to be lower than others in their reference groups also report higher happiness and living standard adequacy scores. There are significant interaction effects as well – poorer individuals draw greater satisfaction from external effects compared to the comparatively well off. Our results are robust to various potential issues, including the bias arising from the construction of reference group as well as the influence of past income levels and income aspirations.

These results are in line with those obtained in other studies pointing to the fact that people in poor societies attach a higher value to the absolute welfare in their community (e.g., Fafchamps and Shilpi, 2008; Ravaillon and Lokshin, 2010; Akay and Martinsson, 2011; etc.). They are also consistent with the predictions by Clark et al. (2008) assuming

that the impact of relative income on subjective well-being within a country will grow smaller as one moves from richer to more deprived economies. This may notably be attributed to the greater role of kinship and altruistic relations in poor rural communities compared to urban areas in Western countries. The positive external effect is also due to the supporting role played by informal networks and insurance mechanisms (such as the Rotating Savings and Credit Association (ROSCA) called *arisan* in Indonesia). Future research should continue to examine relative poverty from a social exchange perspective which can provide insights that have yet to be examined.

The empirical findings in this study provide implications for the development research, especially in defining and attenuating poverty and income inequalities, and consequently drawing redistributive policies as recently emphasized by many authors. Also, the understanding of poverty founded on a notion of low income should be opposed to that derived from subjective judgments of welfare (Asadullah and Chaudhury, 2012). Assessments of these schemes should look beyond income based indicators and revisit previous evaluations by looking at the social aspects of poverty dynamics. Debates and future research on poverty reduction should thus consider relative notions of deprivation, together with determining the threshold level above which these effects occur and start to influence well-being.

References

[1] Akay, A., Martinsson, P., 2011. Does relative income matter for the very poor? Evidence from rural Ethiopia. *Economics Letters*, 110(3), 213-215.

[2] Akay, A., Martinsson, P., Medhin, H., 2012a. Does positional concern matter in poor societies? Evidence from a survey experiment in rural Ethiopia. *World Development*, 40(2), 428-435.

[3] Akay, A., Bargain, O., Zimmermann, K., 2012b. Relative concerns of rural-to-urban migrants in China.*Journal of Economic Behavior and Organization*, 81, 421-441.

[4] Alpizar, F., Carlsson, F., and Johansson-Stenman, O., 2005. How much do we care about absolute versus relative income and consumption? *Journal of Economic Behavior and Organization*, 56, 405-421.

[5] Asadullah, M.N., Chaudhury, N., 2012. Subjective well-being and relative poverty in rural Bangladesh. *Journal of Economic Psychology*, 33, 940–950

[6] Blanchflower, D. G., 2008. International evidence on well-being. IZA DP No. 3354. Institute for the Study of Labor, Bonn.

[7] Blanchflower, D.G., Oswald, A.J., 2004. Well-being over time in Britain and the United States. *Journal of Public Economics*, 88, 1359–1386.

[8] Bookwalter, J., Dalenberg, D., 2010. Relative to What or Whom? The Importance of Norms and Relative Standing to Well-Being in South Africa. *World Development*, 38,345-355.

[9] Caplin, A., Leahy, J., 2001. Psychological expected utility and anticipatory feelings. *The Quarterly Journal of Economics*, 116(1), 55-80.

[10] Clark, A., Senik, C., 2010. Who compares to whom? the anatomy of income comparisons in Europe. *Economic Journal*, 120, 573–594

[11] Clark, A., Frijters, P., Shields, M.A., 2008. Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles. *Journal of Economic Literature*, 46(1), 95-144.

[12] Carlsson, F., Gupta, G., Johansson-Stenman, O., 2009. Keeping up with the Vaishyas Caste and relative standing in India. *Oxford Economic Papers*, 61, 52-73.

[13] Castilla, C., 2012. Subjective well-being and reference-dependence: Insights from Mexico. *Journal of Economic Inequality*, 10, 219–238.

[14] Cojocaru, A., 2010. On relative status inference when reference groups are unobserved: a cautionary tale. University of Maryland, mimeo

[15] Corazzini L., Esposito L., Majorano F., 2012. Reign in hell or serve in heaven? A cross-country journey into the relative vs absolute perceptions of well being. *Journal of Economic Behavior & Organization*, 81(3), 715–730.

[16] Deaton, A., 2004. Measuring poverty in a growing world (or measuring growth in a poor world). *Review of Economics and Statistics*, 87(1), 1-19.

[17] Deaton, A., 2008. Income, health, and well-being around the world: Evidence from the gallup world poll. *Journal of Economic Perspectives*, 22(2), 53–72.

[18] Deaton, A., Zaidi, S., 1998. Guidelines for Constructing Consumption Aggregates for Welfare Analysis. World Bank Development Economics Research Group. http:/www.worldbank.org/poverty/learning/diagnos/consump.pdf.

[19] Di Tella, R., Haisken-De New, J., MacCulloch, R., 2010. Happiness adaptation to income and to status in an individual panel. *Journal of Economic Behavior & Organization*, 76(3), 834–852.

[20] Fafchamps, M., Lund, A., 2003. Risk-sharing networks in rural Philippines. *Journal of Development Economics*, 71, 261–287.

[21] Fafchamps, M., Shilpi, F., 2009. Subjective welfare, isolation, and relative consumption. *Journal of Development Economics*, 86, 43-60.

[22] Gao, W., Smyth, R., 2010. Job satisfaction and relative income in economic transition: status or signal? The case of urban China. *China Economic Review*, 21, 442-455.

[23] Graham, C., Felton, A., 2006. Inequality and happiness: Insights from Latin America. *Journal of Economic Inequality*, 4, 107-122.

[24] Guillen-Royo, M., 2011. Reference group consumption and the subjective wellbeing of the poor in Peru. *Journal of Economic Psychology*, 32, 259-272.

[25] Helliwell, J., 2006. Well-being, social capital and public policy: What's new? *Economic Journal*, 116, 34–45.

[26] Helliwell, J. F., Huang, H., 2009. How's the Job? Well-being and social capital in the workplace. *Industrial & Labor Relations Review*, 63(2), 205–207.

[27] Hirschman, A., 1973. The changing tolerance for income inequality in the course of economic development. *Quarterly Journal of Economics* 87(4), 544–566.

[28] Jalan, J., Ravallion, M., 2002. Geographic poverty traps? Amicro model of consumption growth in rural China. *Journal of Applied Econometrics* 17, 329–346.

[29] Kenny, C., 2005. Does development make you happy? Subjective well-being and economic growth in developing countries. *Social Indicators Research*, 73, 199-219.

[30] Kingdon, G., Knight, J., 2007. Community, Comparisons and Subjective Well-being in a Divided Society. *Journal of Economic Behavior and Organization*, 64, 69-90.

[31] Knight, G., Song, L., Gunatilaka, R., 2009. Subjective well-being and its determinants in rural China. *China Economic Review*, 20, 635–649.

[32] Knight, J., Gunatilaka, R., 2012. Income, aspirations and the Hedonic Treadmill in a poor society. *Journal of Economic Behavior & Organization*, 82(1), 67-81.

[33] Knight, J., Gunatilaka, R., 2010a. Great Expectations? The Subjective Well-being of Rural–Urban Migrants in China. *World Development*, 38, 113-124.

[34] Knight, J., Gunatilaka, R., 2010b. The rural-urban divide in China: Income but not happiness? *Journal of Development Studies*, 46, 506-29.

[35] Kuegler, A., 2009. A Curse of Comparison? Evidence on Reference Groups for Relative Income Concerns. World Bank, Policy Research Working Paper Series No. 4820.

[36] Luttmer, E., 2005. Neighbors as negatives: Relative earnings and well-being. *The Quarterly Journal of Economics*, 120, 963–1020.

[37] Mansouri, G., Rao, V., 2004. Community-based and -driven development. *World Bank Research Observer,* 19, 1–40.

[38] McBride, M., 2001 Relative-income effects on subjective well-being in the cross-section. *Journal of Economic Behavior and Organization*, 45, 251–278

[39] Murgai, R., Winters, P., Sadoulet, E., de Janvrey, A., 2002. Localized and incomplete mutual insurance. *Journal of Development Economics,* 67, 245–274.

[40] National Research Council, 1995. *Measuring Poverty: A New Approach*, National Academy Press, Washington.

[41] Pradhan, M., Ravallion, M. 2000. Measuring poverty using qualitative perceptions of consumption adequacy. *Review of Economics and Statistics*, 82, 462-471.

[42] Ravallion, M., 2008. In: Basu, K., Kanbur, R. (Eds.), Arguments for a Better World: Essays in Honor of Amartya Sen. Oxford University Press, Oxford, pp. 375–397.

[43] Ravallion, M., Dearden, L., 1988. Social security in a 'moral economy': an empirical analysis for java. *Review of economics and statistics*, 70, 36–45.

[44] Ravallion, M., Lokshin, M., 2001. Identifying welfare effects using subjective questions. *Economica*, 68, 335-357.

[45] Ravallion, M., Lokshin, M., 2002. Self-rated economic welfare in Russia. *European Economic Review*, 46, 1453-1473.

[46] Ravallion, M., Lokshin, M., 2010. Who cares about relative deprivation? *Journal of Economic Behavior & Organization*, 73, 171-185.

[47] Rojas, M., 2008. Relative income and well-being in Latin America. Report for the Inter-American Development Bank.

[48] Senik, C., 2004. When information dominates comparison: learning from Russian subjective panel data. *Journal of Public Economics*, 88, 2099–2123.

[49] Senik, C., 2009. Direct evidence on income comparisons and their welfare effects. *Journal of Economic Behavior and Organization*, 72, 408–424.

[50] Sherif, M, Sherif, C., 1969. *Social Psychology*. New York: Harper

[51] Smyth, R., Qian, X., 2008. Inequality and Happiness in Urban China. *Economics Bulletin*, 4, 1-10.

[52] Stark, O., Taylor, J.E., 1991. Migration Incentives, Migration Types: The Role of Relative Deprivation. *Economic Journal*, 101, 1163-1178.

[53] Stevenson, B., Wolfers, J., 2008. Economic Growth and Subjective Well-Being: Reassessing the Easterlin Paradox. *Brookings Papers on Economic Activity*, 39(1), 1-102.

A Appendix

Table A.1: Descriptive Statistics

	Mean	SD
Dependent variables		
Happiness	1.97	0.39
Living standard adequacy	1.95	0.55
Demographic categories		
Female	0.52	0.50
Age	36.00	14.27
Urban	0.53	0.50
Religiousness		
Very religious	0.06	0.24
Religious	0.73	0.44
Somewhat religious	0.18	0.39
Not religious	0.03	0.16
Muslim	0.89	0.31
Financial categories		
Per adult equivalent household expenditures (log)	15.90	0.84
Per Capita household expenditures (log)	15.57	0.86
Per adult equivalent household income (log)	15.20	1.07
Employment		
Employed	0.63	0.48
Out of labour	0.36	0.48
Unemployed	0.02	0.13
Self-assessed health		
Unhealthy	0.00	0.05
Somewhat unhealthy	0.13	0.34
Somewhat healthy	0.76	0.43
Very healthy	0.11	0.31
Highest level of education		
Elementary	0.55	0.50
Higher secondary	0.28	0.45
Post secondary	0.10	0.30
Marital status		
Married	0.69	0.46
Single	0.23	0.42
Seperated	0.01	0.07
Divorced	0.02	0.14
Widowed	0.05	0.21
Ethnicity		
Javanese	0.41	0.49
Sundanese	0.12	0.33
Bali	0.05	0.21
Batak	0.04	0.19
Bugis	0.04	0.19
Sasak	0.04	0.20
Minang	0.04	0.20
Banjar	0.03	0.18
Betawi	0.04	0.20
Southern Sumatrans	0.04	0.19
Others	0.15	0.35
Province		
West Java	0.18	0.39
North Sumatra	0.06	0.23
West Sumatra	0.05	0.22
South Sumatra	0.05	0.22
Lampung	0.04	0.20
DKI Jakarta	0.08	0.27
Central Java	0.12	0.32
DI Yogyakarta	0.06	0.23
East Java	0.14	0.35
Bali	0.05	0.22
West Nusa Tenggara	0.07	0.25
South Kalimantan	0.05	0.21
South Sulawesi	0.05	0.22
Observations	24,154	

Table A.2: Robustness Checks when Using Assets as Proxy for Household Wealth

Dependent variable	Living standard		Happiness	
	(1)	(2)	(3)	(4)
Log per adult equivalent household assets (log A)	0.164***	0.432***	0.0751***	0.113
	(0.00629)	(0.0894)	(0.00726)	(0.103)
Log Leave-out mean hhld assets at subdistrict level	0.0256**	0.286***	0.0232*	0.0601
	(0.0104)	(0.0875)	(0.0123)	(0.101)
Log A * Log leave-out mean A		-0.0163***		-0.00231
		(0.00543)		(0.00628)
Observations	18,784	18,784	18,784	18,784